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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,943	11/07/2003	Wayne F. Block	GEMS8081.186	2942
27061	7590	11/01/2005	EXAMINER	
ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS)			KIKNADZE, IRAKLI	
14135 NORTH CEDARBURG ROAD			ART UNIT	
MEQUON, WI 53097			PAPER NUMBER	
			2882	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,943

Applicant(s)

BLOCK ET AL.

Examiner

Irakli Kiknadze

Art Unit

2882

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

A person shall be entitled to a patent unless –

2. Claims 1-3, 7-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Knott (US Patent 5,511,105).

wherein the first x-ray source has a

distance from a center of the anode disc (10) different than that of the second x-ray source: and wherein the first x-ray source and the second x-ray source are configured to extend radially about the anode disc (Figs. 1 and 3; column 3, lines 13-41; claim 2).

With respect to claim 2, Knott teaches that the anode disc (10) is rotatable (Figs. 1 and 3; column 2, lines 31-40; claim 2).

With respect to claims 3 and 7, Knott teaches that the second fan beam has a spatial coverage equal to that of the first fan beam. The each fan beam have penumbra that extends along a z-axis (Fig.3; see abstract; column 3, line – column 4, line 8).

With respect to claim 8, Knott teaches that each x-ray source includes a tungsten target track integrally formed in a bevel region of the anode disc (10) (column 3, lines 42-47).

With respect to claims 9 and 10, Knott teaches an x-ray tube assembly comprising: a plurality of independently controllable electron sources (5a, 5b, 6a and 6b are controlled by a control unit (22)) configured to emit electrons; an rotating anode disc (10); a plurality of target electrodes disposed on the anode disc (10) and configured to receive electrons emitted by the plurality of independently controllable electron sources and emit a plurality of fan beams of radiographic energy in response thereto; and wherein the plurality of independently controllable electron sources includes a first target electrode at a first radial distance from a center of the anode disc (10) to produce a first spatial coverage and a second target electrode at a second radial distance to produce a second spatial coverage that is substantially similar to the first spatial coverage (Figs. 1 and 3; column 3, lines 13-41; claim 2).

With respect to claims 11 and 12, Knott teaches that each fan beam extends along a z-axis (Fig.3). A plurality of tungsten targets integrated in a beveled portion of the anode disc (10) (column 3, lines 42-47).

With respect to claims 15, Knott teaches the electron sources includes a pair of cathode filaments and wherein the pair of cathode filaments is configured to alternately fire during an imaging scan (Fig.1; column 4, lines 21-34).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knott (US Patent 5,511,105).

With respect to claims 13 and 14, Knott teaches that the focal spots located on the conical anode disc (10) are spaced apart from one another along a z-direction and an x-direction (see abstract and Figs.1 and 3) but fail to teach that the focal spots are spaced apart from one another along a z-direction by approximately one millimeter. It would have been obvious to one of ordinary skill in the art at the time the invention was made to position the focal spots spaced apart from one another along a z-direction in the range of approximately one millimeter, since it has been held that where the general

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conditions of the claim are disclosed in the prior art, discovering the optimum or working range involves only routine skill in the art.

5. Claims 4-6, 13, 14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sohval et al. (US Patent 4,637,040) in view of Knott (US Patent 5,511,105).

With respect to claims 4 and 18, Sohval teaches a CT system comprising: a rotatable gantry (6) having a bore centrally disposed therein; a table movable fore and aft through the bore and configured to position a subject (5) for CT data acquisition; a detector array (3) disposed within the rotatable gantry (6) and configured to x-ray energy attenuated by the subject (5); an anode disc (19) positioned within the rotatable gantry (6); multiple x-ray sources configured to project magnetic energy fan beams toward the subject (5); wherein each projection source is configured to operate at a proportional duty cycle per scan (column 8, lines 4-27; column 9, line 32-60; column 5, lines 25-39). Sohval fails to teach that the x-ray sources extending circumferentially about the anode disc (19). Knott teaches an x-ray tube comprising a first x-ray source (BFB1a) connected to an anode disc (10) and configured to emit a first fan beam of x-rays; a second x-ray source (BFB2b) connected to the anode disc and configured to emit a second fan beam of x-rays; wherein the first x-ray source has a distance from a center of the anode disc (10) different than that of the second x-ray source; and wherein the first x-ray source and the second x-ray source are configured to extend circumferentially about the anode disc (Figs. 1 and 3; column 3, lines 13-41;

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claim 2) generating the x-rays of the different hardness (column 3, lines 43-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the x-ray tube of Knott in the system of Sohval, since such a modification would improve the CT system with dual energy scanning capabilities.

With respect to claim 5, Knott teaches that the first and second x-ray sources are positioned relative to one another on the anode disc such that the first: and the second x-ray sources may be treated as a single focal point source (see abstract).

With respect to claims 6 and 19, Sohval teaches that the multiple high frequency electromagnetic energy projection sources include a first source (9) and a second source (11) and wherein the first and the second source each operate at a 50% duty cycle per scan (column 5, lines 37-39).

With respect to claim 20, Sohval teaches that the sources are configured to project the multiple high frequency electromagnetic energy fan beams such each fan beam has a similar spatial coverage along a z-direction (Fig.14).

With respect to claim 21, Sohval teaches that the CT system includes a plurality of anodes and a plurality of cathodes, and further comprising a controller configured to sequentially fire each cathode before re-firing a respective cathode (column 9; lines 42-49).

With respect to claim 22 Sohval teaches the source arrangement wherein the number of anodes equals the number of cathodes (column 4, lines 32-40).

With respect to claim 23, Sohval teaches a computer programmed to execute an image reconstruction process and wherein the electromagnetic

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energy projection sources are collectively considered a single high frequency electromagnetic energy projection source by the image reconstruction process (column 5, lines 59-66).

With respect to claim 24, Sohval teaches that the CT system is configured to non-invasively acquire diagnostic data of a medical patient (column 8, lines 14-17).

Response to Arguments

6. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
October 24, 2005

IK


EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER